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R. Bruce Scott
Commissioner

MAR 18 2010

STATE PLANNING AND ENVIRONMENTAL ASSESSMENT REPORT (SPEAR)

Regional Facilities Plan

City of Fancy Farm, Graves County, Kentucky
AI 1515; PLN20060001

The City of Fancy Farm, Graves County, has submitted for approval by the Energy and Environment Cabinet (EEC) a regional facility plan titled "*Regional Facilities Plan for the Fancy farm Water and Sewer District*" dated October, 2006. In accordance with KRS Chapter 224 and 401 KAR 5:006, the Department for Environmental Protection (DEP) has prepared a State Planning and Environmental Assessment Report (SPEAR) that summarizes the regional facility plan.

The DEP is required to conduct reviews of the potential environmental impacts of projects applying for funding by the Clean Water State Revolving Fund in accordance with the procedures contained in the State Revolving Fund Operating Agreement between the Environmental Protection Agency Region IV and the Commonwealth of Kentucky. The DEP has included this required review in the attached SPEAR. The DEP has determined that the projects in the SPEAR will not have a significant effect on the environment when all mitigative measures in Section F of the SPEAR are implemented.

The SPEAR contains information supporting this determination in the following sections: A) Project Summary; B) Existing Environment; C) Existing Wastewater Facilities; D) Need for Project; E) Alternatives Analysis; F) Environmental Consequences, Mitigative Measures; G) Public Participation and User Rates; and H) Sources Consulted.

Interested persons are encouraged to submit comments on this SPEAR within 40 days of the above date. The EEC will take no action on this project until after the State Clearinghouse review and public comment period has ended, and will evaluate all comments before a decision is made to proceed with approval of the Regional Facilities Plan or awarding of SRF funds for this project. Send comments to Ms. Anshu Singh, Supervisor, Wastewater Planning Section, Water Infrastructure Branch, Division of Water, 200 Fair Oaks 4th Floor, Frankfort, Kentucky 40601, or by e-mail to anshu.singh@ky.gov, or call her at (502) 564-3410, extension 4805.

Sincerely,

R. Bruce Scott, Commissioner
Department for Environmental Protection

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STATE PLANNING AND ENVIRONMENTAL ASSESMENT REPORT (SPEAR)

City of Fancy Farm, Graves County, Kentucky

AI#1515; PLN20060001

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A. Project Summary and Funding Status

Project Summary: The city of Fancy Farm, in Graves County, is proposing to reconfigure Fancy Farm's aged Wastewater Treatment Plant (WWTP) to serve as flow equalization basins and transport its wastewater flows to the City of Mayfield's facilities for treatment. The equalization basins will help in predicting the flow entering Mayfield's system and keep it predictable and stable. According to the 2006 facility plan, regionalization is the most environmentally feasible option to meet the current and future wastewater needs of the city.

The Planning area is shown in Figure 1 and the 20 years planning period is divided into the following three phases (Figure 3):

Phase I (0-2 years): This phase includes construction of two lift stations and a 6" force main to convey the wastewater flow from the existing Fancy Farm WWTP along KY 80 corridor to an existing manhole in Mayfield's collection system near the intersection of KY 80 and LaSalle Street. In addition, a sanitary sewer evaluation survey will be conducted to identify and remove sources of infiltration and inflow from the collection system. Additionally individual grinder lift station and low pressure force mains (Figure 3 and 13) near KY 339 will be replaced by a combination of gravity sewer and regional lift station. The total estimated project cost is \$3,348,300.

Phase II (3-10 years): This phase involves extending sewer service along KY 80 (Figure 3 and 13). The total estimated project cost is \$2,339,152.

Phase III (11-20 years): This phase involves extending sewer service along Apple Lane, Higgins Lane, Cash Road, KY 80; and installing Carrico Road Interceptor and a lift station on KY 80/Cash Road (Figure 3 and 13). The total estimated project cost is \$2,134,400.

The engineering firm that prepared the facilities plan is Florence & Hutcheson. The project is located in the Purchase Area Development District and within the area covered by the Paducah Regional Office of the Division of Water (DOW).

Funding Status: The city of Fancy Farm intends to fund this project through a combination of loans and grants. These include Kentucky Infrastructure Authority (KIA) grants, low interest State Revolving Fund loan, Community Development Block Grant, USDA Rural Development Loans and Federal Appropriation Grants

B. Existing Environment

Topography: The planning area is located within the Jackson Purchase region of western Kentucky. The elevations vary from 500 feet above mean sea level (amsl) along the eastern most

portion of the planning area to 450 feet amsl near the existing WWTP and 390 feet amsl along the northern and southern portions of the planning area in the West Fork Mayfield Creek and Barnes Creek basins. The topography is best described as gently rolling upland plains to very steep hills characterized by many small drainage basins. These drainage basins have subdivided the planning area into three regions of topographic expression referred to as smooth upland, rough uplands, and alluvial bottoms or valleys. The major portion of the drainage is to West Fork Mayfield Creek via moderate tributaries and manmade drainage ditches. West fork Mayfield Creek forms a natural boundary along the northern side of the drainage area and traverses north of the Fancy Farm area.

Geology: In Graves County, water is obtained from unconsolidated sediments of Tertiary and Quaternary age. The oldest geologic formation exposed on the surface in Graves County is the Tertiary Porters Creek Formation. The Tertiary Period began 70 million years ago, and deposits consisted of marine and fresh- to brackish-water sediments. The distribution of deposits indicates that the area was near the northern limit of the Gulf Embayment (also called the Mississippi Embayment). Parts of the embayment must have been swampy, because thin beds of lignite (brown coal) and carbonaceous clays occur in the western half of the eight-county Jackson Purchase Region. These geological deposits are a marked contrast to the underlying older hard rocks, because most of the Cretaceous and younger sediments remain unconsolidated and soft. Over the last million years, unconsolidated Quaternary sediments have been deposited along the larger streams and rivers.

Soils: The predominant soil groups that exist within the planning area include Collins Association, Grenada Association, Loring Association and Purchase-Loring Association. The Collins Association can be generalized as nearly level to gently sloping, moderately well drained to somewhat poorly drained, very deep with silty alluvium on flood plains of streams. The Grenada association soils are gently sloping to steep, moderately well drained with silty soils on uplands. The Loring association soils are nearly level to moderately sloping, well drained to moderately well drained, silty soils on stream terraces. The Purchase-Loring association soils can be generalized as nearly level to gently sloping, moderately well drained and with low permeability on side slopes in uplands. These soils have been rated as very limited for septic tank absorption fields and somewhat to very limited for sewage lagoons.

Surface Waters: The Fancy Farm planning area is located in the Tennessee-Mississippi-Cumberland-Ohio (4-Rivers) Basin Management Unit. The drainage for Fancy Farm begins in West Fork Mayfield Creek, which flows into Mayfield Creek and ultimately into the Mississippi River.

The planning area is very small. West Fork Mayfield Creek between mile points 5.3 to 15.5 is the only segment which has been assessed and fully supports aquatic life.

Fancy Farm Water District is the drinking water provider in the proposed planning area.

Groundwater: The Fancy Farm Water and Sewer District utilizes groundwater as the primary source for potable water. Groundwater from shallow driven wells in the Mississippi Valley is adequate for domestic use; however, near the river, water levels fluctuate greatly and some

shallow wells are dry or inadequate in the summer and fall. Yields of 1,000 gallons per minute may be expected in most places. The water is hard and contains objectionable amounts of iron and manganese. According to the Groundwater Section of the Kentucky Division of Water, the planning area has areas of low to moderate sensitivity to groundwater pollution.

C. Existing Wastewater Facilities

Wastewater Treatment Plants: The City of Fancy Farm own and operates a 140,000 gallons per day (gpd) WWTP that discharges to unnamed Tributary to the West Fork of Mayfield Creek at latitude 36°48'01"N and longitude 88°47'05"W pursuant to Kentucky Pollutant Discharge Elimination (KPDES) Permit No. KY0053562. The WWTP was constructed in early 1980s. It is a three cell crated lagoon system with a dissolved air floatation (DAF) unit for solids removal, chlorine contact and post-separation. Sludge is removed from the sludge drying bed, loaded into trucks, and hauled to a regional landfill for disposal. The average daily flow, as reported for the period from November 2008 to October 2009, was 0.060 mgd, and the peak daily flow was 0.140 mgd. The discharge quality data for the plant indicates that the plant complies with the effluent permit limit but the condition of the WWTP and related equipment can be characterized as fair to poor. The DAF unit has been reportedly out of service on numerous occasions, and is currently operating with minimal sludge removal capabilities. The solids that are removed in the DAF unit settle in the DAF unit and are removed periodically utilizing a vacuum truck. As a result the sludge drying beds are not being utilized, In addition, all pumps, controls, switches are currently operated manually.

Monthly average effluent limits that must be met by the existing WWTP plant are as follows:

Parameter	Limits
BOD ₅	10 mg/l
Total Suspended Solids	30 mg/l
Ammonia Nitrogen	4 mg/l (summer)/10 mg/l (winter)
Dissolved Oxygen	Not less than 7 mg/l
Total Residual Chlorine	0.011 mg/l
<i>E. coli</i>	130 colonies/100 ml
Total Phosphorus	Report
Total Nitrogen	Report

There are no known straight pipe discharges within the planning area. About 470 households use septic tanks.

Collection System: The city of Fancy Farm is served by a conventional gravity sanitary sewer collection system. It consists of approximately 5 miles of gravity sewer, approximately 2 miles of force main and 6 lift stations. The collection system is subject to excessive infiltration and inflow and the city will conduct an SSES to identify and remove sources of inflow from the collection system.

D. Need for Project

The WWTP is about 30 years old and has outlived its useful life. The equipment condition is rated as fair to poor and the plant poses a risk to the water quality of the area. The proposed project will eliminate an aging system resulting in the elimination of a potential risk to the local water bodies. The project will also extend sewer service to areas currently served by septic tanks and eliminate potential source of pollution.

E. Alternatives Analysis

Wastewater Treatment Alternatives:

Alternative No. 1 - No Action Alternative: This alternative involves no initial construction and no action other than maintaining and operating the existing facilities. However, the existing plant has outlived its useful life and the equipment is failing posing a risk to the water quality of the local streams. The "No Action" alternative could result in the eventual degradation of surface water. As a result, the no-action alternative was eliminated from further consideration

Alternative No. 2 –Aerated Lagoon Treatment Plant Upgrade: This alternative consists of upgrading the aeration capacity of the existing lagoons and replacing the existing DAF unit with a circular clarifier, UV disinfection, effluent flow measurement and post aeration. It will involve construction of a secondary circular clarifies to provide additional removal of total suspended solids from the lagoons and allow for phosphorus removal through flocculation. Effluent from the clarifier will gravity flow into a UV disinfection unit, effluent parshall flume and then through post aeration before discharging at the existing discharge location. The estimated construction cost is \$703,350 with an annual operation and management of \$133,759 and a 20 year present worth of \$2,324,085. This alternative was not selected because it is not environmentally sound as the system will not be capable to achieve the new stringent nutrient limits which are expected to be included in the permit shortly.

Alternative No. 3 – Pumping to Mayfield WWTP: As an alternative to treatment at the existing plant site, pumping wastewater from the City of Fancy Farm to the City of Mayfield's WWTP was considered. This will include construction of two lift stations and a 6" force main to transport wastewater flows from Fancy Farm to Mayfield's collection system. In order to attenuate the existing peak flows, the existing Fancy Farm WWTP will be reconfigured to serve as flow equalization basins such that the flow entering Mayfield's system is generally predictable and stable. Modifications at the existing WWTP will include configuring the existing piping to integrate the proposed lift station, installing level monitoring and controls. The initial construction cost is estimated at \$2,427,000 with an annual operation and management cost of \$75,359 and a 20 year present worth of \$2,289,237. **This is the selected alternative because it provides an economically feasible and environmentally sound option for meeting the long term infrastructure needs of the city.**

F. Environmental Consequences, Mitigative Measures

Impacts on Historic Properties and Archeological Sites:

The Kentucky Heritage Council (KHC) indicated in its March 28, 2006 letter that there are no known historical, cultural, or archaeological sites located in the project area. However, they stated that the proposed project has the potential to impact archaeological sites eligible for listing in the National Register of Historic Places. The proposed project area should be surveyed by a professional archaeologist and the report should be submitted to KHC for review, comment and approval prior to construction.

Impacts on Wetland and Streams and Threatened and Endangered Species:

The U.S. Fish and Wildlife Services replied in correspondence stamped May 1, 2006, stating that no significant adverse impacts to wetlands or federally listed endangered or threatened species are anticipated from this project.

Impacts on Floodplains:

A floodplain construction permit or an exemption will be required from the DOW's Surface Water Permit Branch, Floodplain Management Section, if there are any disturbances in the 100-year floodplain.

Impacts on Air Quality:

Kentucky Division for Air Quality Regulation 401 KAR 63:010 Fugitive Emissions states that no person shall cause, suffer, or allow any material to be handled, processed, transported, or stored without taking reasonable precaution to prevent particulate matter from becoming airborne. Additional requirements include the covering of open bodied trucks, operating outside the work area transporting materials likely to become airborne, and that no one shall allow earth or other material being transported by truck or earth moving equipment to be deposited onto a paved street or roadway. Please note the Fugitive Emissions Fact Sheet located at http://www.air.ky.gov/homepage_repository/e-Clearinghouse.htm

Kentucky Division for Air Quality Regulation 401 KAR 63:005 states that open burning is prohibited. Open Burning is defined as the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the outdoor atmosphere without passing through a stack or chimney. However, open burning may be utilized for the expressed purposes listed on the Open Burning Fact Sheet located at http://www.air.ky.gov/homepage_repository/e-Clearinghouse.htm

Miscellaneous Impacts:

The environmental impact of constructing the proposed facilities includes those temporary impacts of noise, dust, and traffic disruption in the construction area. The proposed project will improve the surface water and groundwater quality over the next 20 years. This action will also provide a planned development for economic growth in the planning area.

G. Public Participation and User Rates

A public hearing was held on October 23, 2006 at the Purchase Area Development District office. The meeting notice was published in The Mayfield Messenger on October 12, 2006. The DOW is unaware of any unresolved significant public objection, which may have been voiced before or after this meeting, in relation to this project. The current monthly sewer rate is a flat fee of \$35 per month for customers served by gravity sewer, and a flat fee of \$34 for customers served by individual grinder lift stations. The proposed rates are expected to be in the range of \$25 to \$48 per 4000 gallons depending on the amount of grants the city can secure.

H. Sources Consulted

Kentucky Department for Public Health
Kentucky Division for Air Quality
Kentucky Division of Forestry
Kentucky Division of Waste Management
Kentucky Division of Water
Kentucky Heritage Council
Kentucky State Clearinghouse
Natural Resources Conservation Service Web Soil Survey
U.S. Fish & Wildlife Service
City of Fancy Farm
Florence & Hutcheson, Consulting Engineer
Maysville Electric and Water Services
Purchase Area Development District



